H

PROPHYLAXIS
of
HAY FEVER

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POLLEN VACCINE

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HAY FEVER

HISTORICAL: The medical writers of the sixteenth, seventeenth and eighteenth centuries mentioned the existence of a certain form of catarrh of the mucous membranes, of annual and seasonal periodicity, which was correlated in some way with the flowering period of plants; but the recognition and establishment of hay fever as a true clinical entity is accredited to John Bostock[1]. The first definite connection between the pollen of grasses and hay fever was recognized by John Elliotson[2] in 1830. The medical world is indebted to Dunbar[3] for the exhaustive scientific proof of the specific action of pollen as the causative factor of hay fever.

The work of Noon[4], Freeman[5], Clowes[6] and others, [7] [8] [9] [10] and especially the recent work of Koessler[11], has demonstrated the practicability and clinical value of active immunization against hay fever by means of pollen extracts. Clowes was the first to report a definite method of vaccination against hay fever in this country, and his work stimulated extensive study of this form of active immunization which has now been placed on a more complete basis by Koessler.

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[1] **Bostock**: Medico-Chirurgical Transactions, London, 1819, X, 161.
[2] **Elliotson**: The Lancet, 1830, II, 370.
[3] **Dunbar**: Zur Ursache und Specifichen Heilung des Heufiebers, Muenchen, 1903.
[4] **Noon**: The Lancet, June 10, 1911, 814.
[5] **Freeman**: The Lancet, September 16, 1911, 1572.
[6] **Clowes**: Proc. Soc. Exp. Biology and Medicine, 1913, X, 70.
[7] **Lowdermilk**: Journal A. M. A., July 11, 1914, 141.
[8] **Manning**: Journal A. M. A., Feb. 20, 1915, 655.
[9] **Freeman**: The Lancet, April 25, 1914; 1178.
[10] **Oppenheimer & Gottlieb**: N. Y. Medical Journal, Feb. 6, 1915, 229.
[11] **Koessler**: Illinois Medical Journal, August, 1914, 120.

RESULTS: Clowes vaccinated 8 patients, all of whom experienced a marked alleviation of general symptoms. Of the 84 cases reported by Freeman, 64.6 per cent were completely cured or markedly improved; 23.9 per cent of the cases showed slight improvement, while 11.5 per cent were not benefited. Twenty-one cases have been reported by Manning and of these, fourteen were objectively and subjectively relieved; in the other seven, the treatment was incomplete but four of these had milder attacks. Lowdermilk reports 19 cases, with successful results in 16. Koessler has treated 41 hay fever patients by active immunization with Pollen Vaccine and reports four completely cured; 29 markedly improved subjectively and objectively; 5 were subjectively improved, while the remaining 3 were not affected. Oppenheimer and Gottlieb treated 11 patients before and during the hay fever season: altogether there were 5 cures, and marked improvement occurred in 4 cases; while 2 of the cases showed no improvement.

Marked improvement consists in later, milder and shorter attacks; in the possibility of remaining in town and at work for the first time in years; and in a diminution or disappearance of the troublesome cough and constitutional symptoms.

DESCRIPTION OF VACCINE: While the results obtained by the above-mentioned investigators have demonstrated the efficiency of Pollen Vaccine, yet their work has also shown that watery extracts of pollen are unstable and rapidly deteriorate, losing their potency after about three weeks. Therefore, it has not been possible heretofore to market Pollen Vaccine commercially. By experimentation with different means of extracting the pollen, a method has been evolved in our laboratories of making the extraction in glycerin and salt which yields a vaccine that has been demonstrated to remain stable without any detectable loss in potency for a period longer than the time required to administer the complete prophylactic treatment.

In the preparation of Lederle's Pollen Vaccine, the pollen from the various common grasses, weeds and other flowering plants has been properly collected, dried and extracted. The correct amounts of vaccine for the various doses are supplied in individual vials serially numbered, each vial containing approximately one-tenth cubic centimeter of the vaccine. Before administration, the vaccine must be diluted with the diluent which is furnished in a separate vial; but this final dilution should not be made until immediately before administration of the vaccine.

DOSAGE AND ADMINISTRATION: The prophylactic treatment consists of 15 doses of Pollen Vaccine administered subcutaneously—in the abdominal wall, in the interscapular region, or at the insertion of the deltoid muscle—using the same careful asepsis as for any hypodermic injection.

The interval between doses is usually one or two days, depending upon the time required for the reaction from the previous dose to subside; although some workers have used intervals of 3 to 10 days. If, therefore, there is very slight reaction, or if the reaction subsides quickly, the doses may be administered every 2 or 3 days to good advantage.

DURATION OF TREATMENT: The duration of the prophylactic treatment should, on the average, consume from four to six weeks or longer.

PERIODS OF HAY FEVER: In the United States, hay fever appears at two distinct periods of the year—one, beginning about the last week in May and continuing until the second week in July (the so-called "rose cold"); the other (known as the American form of hay fever), commences about the second week in August and continues until the first week in October. The spring variety is caused by the pollen of grasses, notably timothy, rye, wheat, red top, June grass, etc.; while the autumnal form is induced by the pollen of ragweed, golden-rod, Indian corn, etc.

TIME TO VACCINATE: It is highly desirable that the treatment be a strictly prophylactic one, although encouraging results have been obtained with active immunization when carried out after the disease was already developed. Since it is desirable that a maximum immunity be established before the hay fever season sets in, it is recommended that the prophylactic inoculations be given at least 8 to 10 weeks before the time for the annual onset.

CAUTION: In the early stages of immunization it is possible by an overdose to induce a severe attack of hay fever lasting nearly 24 hours. In the later stages, however, this has not been observed. Therefore, it is important to follow the progressive dosage and to allow a sufficient interval between the doses. In case a patient exhibits a severe reaction to the vaccine, it is advisable to administer only a portion of each of the succeeding doses.

REACTION: In all persons exhibiting susceptibility to true hay fever, the condition may be diagnosed by the administration of a proper amount of Pollen Vaccine which will induce a well-marked reaction. This begins within one-half to two hours and is characterized by an exaggeration of the usual symptoms of an attack—sneezing, lacrimation, itching of the eyes, cough, dyspnea in asthmatic subjects, and sometimes edema and urticaria. The doses of Lederle's Pollen Vaccine for the prophylactic treatment of hay fever have been so adjusted as to avoid these severe manifestations.

According to Koessler, only a very small number of patients show any local reaction at the site of injection, consisting of a slight reddish-colored tumefaction.

IMMUNITY: The immunity does not last equally long in all patients. According to Freeman, the immunity acquired from the prophylactic inoculations seems to last at least one year after the treatment has been discontinued. Koessler observed that the susceptibility of patients who received the prophylactic inoculations before the onset of the hay fever season returned during the fall and winter; so that, in the following spring, the active immunization had to be repeated in order to protect the individual from an attack during the next hay fever season. This emphasizes the fact that patients must return each year for several years, if the prophylactic treatment is to have a permanent influence on their susceptibility to hay fever.

SOME GENERAL PRINCIPLES: (1) Patients with marked constitutional disturbances, including asthma, apparently derive greater benefit from the prophylactic inoculations than patients with slight and local symptoms. (2) Age makes no difference in the benefit derived from the prophylactic treatment.

TREATMENT DURING ATTACK: While it is most desirable and recommended by all workers that the inoculations be strictly prophylactic—that is, that they be given prior to the onset of the hay fever season—yet several investigators have used the Pollen Vaccine for treating patients during an actual attack of hay fever. Thus, Lowdermilk treated 16 patients after the onset of the actual attack and 13 of them were cured; the 3 not benefited all began treatment more than a month after the onset of symptoms. The 21 cases reported by Manning were patients who were already suffering from the disease, and 14 of them were relieved objectively and subjectively. Of the cases treated by Oppenheimer and Gottlieb, 5 were treated during the attack; and of these, 4 were promptly cured, while the other patient received no benefit.

If the vaccine is administered during the attack of hay fever, it is important that the doses be sufficiently spaced to prevent a severe reaction. For this reason, most workers have adopted intervals of 3 to 10 days.

HOW TO SECURE TREATMENT: Lederle's Pollen Vaccine has been demonstrated to retain its potency unimpaired for a period which is longer than the time necessary to administer the complete prophylactic treatment. The period of potency is stamped on each package. The vaccine for each case to be treated should be obtained by direct shipment from the laboratory at the time when the physician desires to begin the treatment; and the treatment should be started promptly in order to be completed before the expiration date stamped on the package.

In view of the above, it will not be practicable for druggists to carry this product in stock. It will, therefore, be necessary for the physician to order Pollen Vaccine through the druggist, as needed. This product is not exchangeable or returnable.

The cost of this complete prophylactic treatment for hay fever is Fifteen Dollars.

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